

SEQUENCE LISTING

<110> Harper, Jeffrey W.
Elledge, Stephen J.

<120> F-BOX PROTEINS AND GENES

<130> BCM-03510

<140>
<141>

<150> 08/951,621
<151> 1997-10-16

<160> 60

<170> PatentIn Ver. 2.0

<210> 1
<211> 42
<212> PRT
<213> Homo sapiens

<400> 1
Leu Pro Ala Arg Gly Leu Asp His Ile Ala Glu Asn Ile Leu Ser Tyr
1 5 10 15
Leu Asp Ala Lys Ser Leu Cys Ala Ala Glu Leu Val Cys Lys Glu Trp
20 25 30
Tyr Arg Val Thr Ser Asp Gly Met Leu Trp
35 40

<210> 2
<211> 126
<212> DNA
<213> Homo sapiens

<400> 2
ctgccagctc ggggattgga tcatattgct gagaacattc tgtcataacctt ggatgcctaa 60
tcactatgtg ctgctgaact tgttgcaag gaatggtacc gagtgacctc tgatggcatg 120
ctgtgg 126

<210> 3
<211> 38
<212> PRT
<213> Homo sapiens

<400> 3
Leu Pro Lys Glu Leu Leu Arg Ile Phe Ser Phe Leu Asp Ile Val
1 5 10 15
Thr Leu Cys Arg Cys Ala Gln Ile Ser Lys Ala Trp Asn Ile Leu Ala
20 25 30
Leu Asp Gly Ser Asn Trp
35

<210> 4
<211> 114
<212> DNA
<213> Homo sapiens

<400> 4
ttacccaaag aacttctgtt aagaatattt tccttcttgg atatagtaac tttgtgccga 60
tgtgcacaga tttccaaggc ttggaacatc ttagccctgg atgaaagcaa ctgg 114

<210> 5
<211> 38
<212> PRT
<213> Homo sapiens

<400> 5
Leu Pro Tyr Glu Leu Ile Gln Leu Ile Leu Asn His Leu Thr Leu Pro
1 5 10 15

Asp Leu Cys Arg Leu Ala Gln Thr Cys Lys Leu Leu Ser Gln His Cys
20 25 30

Cys Asp Pro Leu Gln Tyr
35

<210> 6
<211> 71
<212> DNA
<213> Homo sapiens

<400> 6
ctacacctatg agcttattca gctgattctg aatcatctta cactaccaga cctgtgtaga 60
ttagcacaga c 71

<210> 7
<211> 38
<212> PRT
<213> Mus musculus

<400> 7
Leu Pro Tyr Glu Leu Ile Gln Leu Ile Leu Asn His Leu Ser Leu Pro
1 5 10 15

Asp Leu Cys Arg Leu Ala Gln Thr Cys Arg Leu Leu His Gln His Cys
20 25 30

Cys Asp Pro Leu Gln Tyr
35

<210> 8
<211> 114
<212> DNA
<213> Mus musculus

<400> 8
ctaccatatg agctcattca actgattctg aatcatctt cactaccaga cctgtgtaga 60
ttagccaga cttgcaggct tctccaccag cattgctgtg atcccttgca atat 114

<210> 9
<211> 38
<212> PRT

<213> Homo sapiens

<400> 9
Leu Pro Thr Asp Pro Leu Leu Leu Ile Leu Ser Phe Leu Asp Tyr Arg
1 5 10 15

Asp Leu Ile Asn Cys Cys Tyr Val Ser Arg Arg Leu Ser Gln Leu Ser
20 25 30

Ser His Asp Pro Leu Trp
35

<210> 10

<211> 114

<212> DNA

<213> Homo sapiens

<400> 10
ctgcccaccc atccccctgct cctcatctta tccttttgg actatcgaaa tctaatcaac 60
tgttggatg tcagtcgaag acttagccag ctatcaagtc atgatccgct gtgg 114

<210> 11

<211> 38

<212> PRT

<213> Mus musculus

<400> 11

Leu Pro Thr Asp Pro Leu Leu Ile Val Ser Phe Val Asp Tyr Arg
1 5 10 15

Asp Leu Ile Asn Cys Cys Tyr Val Ser Arg Ser Val Ser Gln Leu Ser
20 25 30

Thr His Asp Pro Leu Trp
35

<210> 12

<211> 114

<212> DNA

<213> Mus musculus

<400> 12

ctacccaccc accctctgct cctcatagta tccttcgtgg actacaggaa cctaatcaat 60
tgttggatg ttatcgaaag cgtttagccag ctatcaactc atgatccact gtgg 114

<210> 13

<211> 38

<212> PRT

<213> Homo sapiens

<400> 13

Leu Pro Pro Glu Val Met Leu Ser Ile Phe Ser Tyr Leu Asn Pro Gln
1 5 10 15

Glu Leu Cys Arg Cys Ser Gln Val Ser Met Lys Trp Ser Gln Leu Thr
20 25 30

Lys Thr Gly Ser Leu Trp
35

<210> 14
<211> 113
<212> DNA
<213> Homo sapiens

<400> 14
cttcctcctg aggtaatgct gtcaatttc agctatctta atcctaaga gttattcgat 60
gcagtcaagt aagcatgaaa tggctcagc tgacaaaaac gggatcgctt tgg 113

<210> 15
<211> 38
<212> PRT
<213> Mus musculus

<400> 15
Leu Pro Pro Glu Val Met Leu Ser Ile Phe Ser Tyr Leu Asn Pro Gln
1 5 10 15
Glu Leu Cys Arg Cys Ser Gln Val Ser Thr Lys Trp Ser Gln Leu Ala
20 25 30
Lys Thr Gly Ser Leu Trp
35

<210> 16
<211> 114
<212> DNA
<213> Mus musculus

<400> 16
cttcctcctg aggtaatgct gtcattttc agttaccctta atcctaaga attgtgtcgg 60
tgttagtcaag tcagtagtactaa gtggctcag ctggcaaaaa caggatctt gtgg 114

<210> 17
<211> 41
<212> PRT
<213> Homo sapiens

<400> 17
Leu Pro Leu Glu Met Leu Thr Tyr Ile Leu Ser Phe Leu Pro Leu Ser
1 5 10 15
Asp Gln Lys Glu Ala Ser Leu Val Ser Trp Ala Trp Tyr Arg Ala Ala
20 25 30
Gln Asn Ala Leu Arg Glu Arg Leu Trp
35 40

<210> 18
<211> 123
<212> DNA
<213> Homo sapiens

<400> 18
ctgccccctgg agatgctcac atatattctg agcttcctgc ctctgtcaga tcagaaagag 60
gcctccctcg tgagttgggc ttgttaccgt gctgcccaga atgccttcg ggagaggctg 120
tgg 123

<210> 19
<211> 35
<212> PRT
<213> Homo sapiens

<400> 19
Leu Pro Pro Glu Leu Ser Phe Thr Ile Leu Ser Tyr Leu Asn Ala Thr
1 5 10 15

Asp Leu Cys Leu Ala Ser Cys Val Trp Gln Asp Leu Ala Asn Asp Glu
20 25 30

Leu Leu Trp
35

<210> 20
<211> 105
<212> DNA
<213> Homo sapiens

<400> 20
ttgcctcctg agctaagctt taccatcttg tcctacctga atgcaactga cctttgcttg 60
gcttcatgtg tttggcagga cttgcgaat gatgaacttc tctgg 105

<210> 21
<211> 35
<212> PRT
<213> Mus musculus

<400> 21
Leu Pro Pro Glu Leu Ser Phe Thr Ile Leu Ser Tyr Leu Asn Ala Ile
1 5 10 15

Asp Leu Cys Leu Ala Ser Cys Val Trp Gln Asp Leu Ala Asn Asp Glu
20 25 30

Leu Leu Trp
35

<210> 22
<211> 105
<212> DNA
<213> Mus musculus

<400> 22
ctgcctcctg agctgaggct caccatccta tcccacctgg atgcaactga cctttgccta 60
gcttcctgtg gttggcaaga actcgctaat gatgaacttc tctgg 105

<210> 23
<211> 38
<212> PRT
<213> Mus musculus

<400> 23
Leu Pro Arg Val Leu Ser Val Tyr Ile Phe Ser Phe Leu Asp Pro Arg
1 5 10 15

Ser Leu Cys Arg Cys Ala Gln Val Ser Trp Tyr Trp Lys Ser Leu Ala
20 25 30

Glu Leu Asp Gln Leu Trp
35

<210> 24
<211> 114
<212> DNA
<213> Mus musculus

<400> 24
cttccaaggg tgttatctgt ctacatctt tccttcctgg atccccggag tctttgccgt 60
tgtcacagg tgagctgta ctgaaagagc ttggctgagt tggaccagct ctgg 114

<210> 25
<211> 38
<212> PRT
<213> Homo sapiens

<400> 25
Leu Pro Ile Asp Val Gln Leu Tyr Ile Leu Ser Phe Leu Ser Pro His
1 5 10 15

Asp Leu Cys Gln Leu Gly Ser Thr Asn His Tyr Trp Asn Glu Thr Val
20 25 30

Arg His Pro Ile Leu Trp
35

<210> 26
<211> 114
<212> DNA
<213> Homo sapiens

<400> 26
ctgccgattg atgtacagct atatatttg tcctttctt cacctcatga tctgtgtcag 60
ttggaaagta caaatcatta ttggaaatgaa actgtaagac atccaaattct ttgg 114

<210> 27
<211> 40
<212> PRT
<213> Homo sapiens

<400> 27
Leu Pro Leu Glu Leu Trp Arg Met Ile Leu Ala Tyr Leu His Leu Pro
1 5 10 15

Asp Leu Gly Arg Cys Ser Leu Val Cys Arg Ala Trp Tyr Glu Leu Ile
20 25 30

Leu Ser Leu Asp Ser Thr Arg Trp
35 40

<210> 28
<211> 120
<212> DNA
<213> Homo sapiens

<400> 28
ctcccccttgg agctgtggcg catgatctta gcctacttgc accttcccga cctgggccgc 60
tgcagcctgg tatgcaggc ctggatgaa ctgatcctca gtctcgacag caccgcgtgg 120

<210> 29
<211> 33
<212> PRT

<213> Mus musculus

<400> 29

Leu Pro Ala Glu Ile Thr Phe Lys Ile Phe Ser Gln Leu Asp Ile Arg
1 5 10 15

Ser Leu Cys Arg Ala Ser Leu Thr Cys Arg Ser Trp Asn Asp Phe Lys
20 25 30

Ser

<210> 30

<211> 90

<212> DNA

<213> Mus musculus

<400> 30

ctgcctgcag aaatcacttt taaaattttc agtcagctgg acattcggag tctgtgcagg 60
gcttcattga catgcaggag ctggaatgac 90

<210> 31

<211> 38

<212> PRT

<213> Mus musculus

<400> 31

Leu Pro Leu Leu Gln Gln Pro Leu Leu Cys Ser Val Ala His Pro Ile
1 5 10 15

Ala Ser Phe Thr Met Leu Ser Tyr Leu Thr Gly Lys Glu Ala Ala His
20 25 30

Leu Ser Val Glu Leu Trp
35

<210> 32

<211> 114

<212> DNA

<213> Mus musculus

<400> 32

ctgccattac tgcagcagcc acttctgtgt tctgtggctc atcccatcgc cagcttcacc 60
atgctgtcat acctcacggg aaaggaggcc gctcatctgt cagtggagtt gtgg 114

<210> 33

<211> 38

<212> PRT

<213> Mus musculus

<400> 33

Leu Pro Asp Ser Leu Val Tyr Gln Ile Phe Leu Ser Leu Gly Pro Ala
1 5 10 15

Asp Val Leu Ala Ala Gly Leu Val Cys Arg Gln Trp Gln Ala Val Ser
20 25 30

Arg Asp Glu Phe Leu Trp
35

<210> 34
<211> 114
<212> DNA
<213> Mus musculus

<400> 34
ctccccgaca gccttgcata ccagatcttc ctgagttgg gcctgcaga tggctggct 60
gctggctgg tatgcccca atggcaggct gtgtcccgaa atgagttctt atgg 114

<210> 35
<211> 31
<212> PRT
<213> Mus musculus

<400> 35
Leu Pro Glu Glu Val Leu Ala Leu Ile Phe Arg Asp Leu Pro Leu Arg
1 5 10 15
Asp Leu Ala Val Ala Thr Arg Val Cys Arg Ala Trp Ala Ala Ala
20 25 30

<210> 36
<211> 93
<212> DNA
<213> Mus musculus

<400> 36
ctgcacagg aagtgttggc gtcatcttc cgtgacctgc ctctcaggaa cttgtgtta 60
gccaccagag tctgcaggc ctggcgccg gct 93

<210> 37
<211> 38
<212> PRT
<213> Mus musculus

<400> 37
Leu Pro Ser Val Pro Met Met Glu Ile Leu Ser Tyr Leu Asp Ala Tyr
1 5 10 15
Ser Leu Leu Gln Ala Ala Gln Val Asn Lys Asn Trp Asn Glu Leu Ala
20 25 30
Ser Ser Asp Val Leu Trp
35

<210> 38
<211> 114
<212> DNA
<213> Mus musculus

<400> 38
ttaccttagtg tgccgatgat gaaaatcctc tcctatctgg atgcctacag tttgctacag 60
gctgccaag tgaacaagaa ctgaaatgaa cttgcaagca gtgatgtcct gtgg 114

<210> 39
<211> 38
<212> PRT
<213> Mus musculus

<400> 39
Met Pro Ser Glu Ile Leu Val Lys Ile Leu Ser Tyr Leu Asp Ala Val
1 5 10 15

Thr Leu Val Cys Ile Gly Cys Val Ser Arg Arg Phe Tyr His Leu Ala
20 25 30

Asp Asp Asn Leu Ile Trp
35

<210> 40
<211> 114
<212> DNA
<213> Mus musculus

<400> 40
atgccatcgaaatcttggtaagatacttctttacttggatgcgggtgaccttgggtgtgc 60
attggatgttgtggcagacgttttatcatttggctgatgacaatcttatttgg 114

<210> 41
<211> 43
<212> PRT
<213> Homo sapiens

<400> 41
Leu Pro Met Glu Val Leu Met Tyr Ile Phe Arg Trp Val Val Ser Ser
1 5 10 15

Asp Leu Asp Leu Arg Ser Leu Glu Gln Leu Ser Leu Val Cys Arg Gly
20 25 30

Phe Tyr Ile Cys Ala Arg Asp Pro Glu Ile Trp
35 40

<210> 42
<211> 129
<212> DNA
<213> Homo sapiens

<400> 42
ctgccaatggaggcctgatgtacatcttccgatgggtggtgtctagtga 60
agatcattggagcagttgtcgtggatgcagagggtctacatctgtgc 120
gaaatatgg 129

<210> 43
<211> 18
<212> PRT
<213> Mus musculus

<400> 43
Leu Ser Leu Val Cys Arg Gly Phe Tyr Ile Cys Ala Arg Asp Pro Glu
1 5 10 15

Ile Trp

<210> 44
<211> 81
<212> DNA
<213> Mus musculus

<400> 44
gacttggacc tcagatcggtt agagcagttg tcactgggtt gcagaggatt ctatatctgt 60
gccagagacc ctgaaatctg g 81

<210> 45
<211> 31
<212> PRT
<213> Homo sapiens

<400> 45
Leu Pro Tyr Glu Leu Ala Ile Asn Ile Phe Xaa Tyr Leu Asp Arg Lys
1 5 10 15
Glu Leu Gly Arg Cys Ala Gln Val Ser Lys Thr Trp Glu Gly Asp
20 25 30

<210> 46
<211> 93
<212> DNA
<213> Homo sapiens

<400> 46
ctgccttacg aattggcaat caatatattt agtatctgga caggaaagaa ctaggaagat 60
gtgcacaggt gagcaagacg tggaaaggtg att 93

<210> 47
<211> 38
<212> PRT
<213> Homo sapiens

<400> 47
Leu Pro Leu Glu Leu Lys Leu Arg Ile Phe Arg Leu Leu Asp Val Arg
1 5 10 15
Ser Val Leu Ser Leu Ser Ala Val Cys Arg Asp Leu Phe Thr Ala Ser
20 25 30
Asn Asp Pro Leu Leu Trp
35

<210> 48
<211> 114
<212> DNA
<213> Homo sapiens

<400> 48
ctcccatgg aactgaaact acggatcttc cgacttctgg atgttcgttc cgtcttgcgtct 60
ttgtctgcgg tttgtcgtga cctctttact gcttcaaatg acccactcct gtgg 114

<210> 49
<211> 38
<212> PRT
<213> Mus musculus

<400> 49
 Leu Pro Leu Glu Leu Lys Leu Arg Ile Phe Arg Leu Leu Asp Val His
 1 5 10 15

Ser Val Leu Ala Leu Ser Ala Val Cys His Asp Leu Leu Ile Ala Ser
 20 25 30

Asn Asp Pro Leu Leu Trp
 35

<210> 50
 <211> 114
 <212> DNA
 <213> Mus musculus

<400> 50
 cttccactgg agctgaaact acgcatttc cgactttgg atgttcattc tgcctggcc 60
 ctgtctgcag tctgtcatga ctcctcatt gcgtcaaattg acccaactgt gtgg 114

<210> 51
 <211> 456
 <212> PRT
 <213> Homo sapiens

<400> 51
 Ser Ala Met Val Phe Ser Asn Asn Asp Glu Gly Leu Ile Asn Lys Lys
 1 5 10 15

Leu Pro Lys Glu Leu Leu Arg Ile Phe Ser Phe Leu Asp Ile Val
 20 25 30

Thr Leu Cys Arg Cys Ala Gln Ile Ser Lys Ala Trp Asn Ile Leu Ala
 35 40 45

Leu Asp Gly Ser Asn Trp Gln Arg Ile Asp Leu Phe Asn Phe Gln Ile
 50 55 60

Asp Val Glu Gly Arg Val Val Glu Asn Ile Ser Lys Arg Cys Gly Gly
 65 70 75 80

Phe Leu Arg Lys Leu Ser Leu Arg Gly Cys Ile Gly Val Gly Asp Ser
 85 90 95

Ser Leu Lys Thr Phe Ala Gln Asn Cys Arg Asn Ile Glu His Leu Asn
 100 105 110

Leu Asn Gly Cys Thr Lys Ile Thr Asp Ser Thr Cys Tyr Ser Leu Ser
 115 120 125

Arg Phe Cys Ser Lys Leu Lys His Leu Asp Leu Thr Ser Cys Val Ser
 130 135 140

Ile Thr Asn Ser Ser Leu Lys Gly Ile Ser Glu Gly Cys Arg Asn Leu
 145 150 155 160

Glu Tyr Leu Asn Leu Ser Trp Cys Asp Gln Ile Thr Lys Asp Gly Ile
 165 170 175

Glu Ala Leu Val Arg Gly Cys Arg Gly Leu Lys Ala Leu Leu Arg
 180 185 190

Gly Cys Thr Gln Leu Glu Asp Glu Ala Leu Lys His Ile Gln Asn Tyr
 195 200 205
 Cys His Glu Leu Val Ser Leu Asn Leu Gln Ser Cys Ser Arg Ile Thr
 210 215 220
 Asp Glu Gly Val Val Gln Ile Cys Arg Gly Cys His Arg Leu Gln Ala
 225 230 235 240
 Leu Cys Leu Ser Gly Cys Ser Asn Leu Thr Asp Ala Ser Leu Thr Ala
 245 250 255
 Leu Gly Leu Asn Cys Pro Arg Leu Gln Ile Leu Glu Ala Ala Arg Cys
 260 265 270
 Ser His Leu Thr Asp Ala Gly Phe Thr Leu Leu Ala Arg Asn Cys His
 275 280 285
 Glu Leu Glu Lys Met Asp Leu Glu Glu Cys Ile Leu Ile Thr Asp Ser
 290 295 300
 Thr Leu Ile Gln Leu Ser Ile His Cys Pro Lys Leu Gln Ala Leu Ser
 305 310 315 320
 Leu Ser His Cys Glu Leu Ile Thr Asp Asp Gly Ile Leu His Leu Ser
 325 330 335
 Asn Ser Thr Cys Gly His Glu Arg Leu Arg Val Leu Glu Leu Asp Asn
 340 345 350
 Cys Leu Leu Ile Thr Asp Val Ala Leu Glu His Leu Glu Thr Ala Glu
 355 360 365
 Ala Trp Ser Ala Ser Ser Cys Thr Thr Ala Ser Arg Leu Pro Val Gln
 370 375 380
 Ala Ser Ser Gly Cys Gly Leu Ser Ser Leu Met Ser Lys Ser Thr Pro
 385 390 395 400
 Thr Leu Leu Pro Ser Pro His Arg Gln Gln Trp Gln Glu Val Asp Ser
 405 410 415
 Asp Cys Ala Gly Ala Val Ser Phe Ser Asp Ser Ser Cys Leu Gly Pro
 420 425 430
 Arg Gly Asp Glu Ala Ser Phe Pro Leu Glu Asp Leu Ser Leu Pro Asp
 435 440 445
 Arg Leu His His His Pro Ile Cys
 450 455

<210> 52
 <211> 1230
 <212> DNA
 <213> Homo sapiens

<400> 52
 ttccggccatg gttttctcaa acaatgatga aggccttatt aacaaaaagt tacccaaaga 60
 acttctgtta agaatatttt ccttcttgga tatagtaact ttgtgccat gtgcacagat 120
 ttccaaggct tggAACatct tagccctggta tggAGCAAC tggAAAGAAA tagatTTT 180
 taactttcaa atagatgttag aggttcgagt ggtggaaaat atctcgaagc gatgcgtgg 240

attcctgagg aagctcagct tgcgaggctg cattgggttt ggggattccct ccttgaagac 300
 ctttgcacag aactgcccga acattgaaca tttgaaccc aatggatgca caaaaatcac 360
 tgacacgcac tgtagatgcc ttagcagatt ctgttccaaag ctgaaacatc tggatctgac 420
 ctccctgtgtc tcttattacaa acagtcctt gaaggggatc agtgagggct gccgaaaacct 480
 ggagtttgc aacctctt ggtgtatca gatcacgaag gatggcatcg aggcactgg 540
 gcgagggtgt cgaggcctga aagccctgct cctgaggggc tgacacacagt tagaagatga 600
 agctctgaaa cacattcaga attactgcca tgagcttgatc agcctcaact tgcaactt 660
 ctcacgtatc acggatgaag gtgtgggtca gatatgcagg ggctgtcacc ggctacaggc 720
 tctctgcctt tcgggttgca gcaacctcac agatgcctc cttacagccc tgggttgaa 780
 ctgtccgcga ctgcaaattt tggaggctgc ccgatgcctc catttgactg acgcaggttt 840
 tacacttta gctcgaatt gccacgaatt ggagaagatg gatcttgaag aatgcaccc 900
 gataaccgac agcacactca tccagcttc cattcaactgt cctaaactgc aagccctgag 960
 cctgtcccac tgtgaactca tcacagatga tgggatectg cacctgagca acagtacctg 1020
 tggccatgag aggctgcggg tactggagtt ggacaactgc ctccatca ctgatgtggc 1080
 cctggAACAC ctagaaactg ccgaggcctg gagcgcctcg agctgtacga ctgcccagcag 1140
 gttacccgtg cagggcatcaaa gcggatgcgg gctcagctcc ctcatgtcaa agtccacgccc 1200
 tactttgctc ccgtcaccacc accgacagca 1230

<210> 53
 <211> 380
 <212> PRT
 <213> Homo sapiens

<400> 53
 Arg Pro Arg Phe Gly Thr Ser Asp Ile Glu Asp Asp Ala Tyr Ala Glu
 1 5 10 15
 Lys Asp Gly Cys Gly Met Asp Ser Leu Asn Lys Lys Phe Ser Ser Ala
 20 25 30
 Val Leu Gly Glu Gly Pro Asn Asn Gly Tyr Phe Asp Lys Leu Pro Tyr
 35 40 45
 Glu Leu Ile Gln Leu Ile Leu Asn His Leu Thr Leu Pro Asp Leu Cys
 50 55 60
 Arg Leu Ala Gln Thr Cys Lys Leu Leu Ser Gln His Cys Cys Asp Pro
 65 70 75 80
 Leu Gln Tyr Ile His Leu Asn Leu Gln Pro Tyr Trp Ala Lys Leu Asp
 85 90 95
 Asp Thr Ser Leu Glu Phe Leu Gln Ser Arg Cys Thr Leu Val Gln Trp
 100 105 110
 Leu Asn Leu Ser Trp Thr Gly Asn Arg Gly Phe Ile Ser Val Ala Gly
 115 120 125
 Phe Ser Arg Phe Leu Lys Val Cys Gly Ser Glu Leu Val Arg Leu Glu
 130 135 140
 Leu Ser Cys Ser His Phe Leu Asn Glu Thr Cys Leu Glu Val Ile Ser
 145 150 155 160
 Glu Met Cys Pro Asn Leu Gln Ala Leu Asn Leu Ser Ser Cys Asp Lys
 165 170 175
 Leu Pro Pro Gln Ala Phe Asn His Ile Ala Lys Leu Cys Ser Leu Lys
 180 185 190
 Arg Leu Val Leu Tyr Arg Thr Lys Val Glu Gln Thr Ala Leu Leu Ser
 195 200 205

Ile Leu Asn Phe Cys Ser Glu Leu Gln His Leu Ser Leu Gly Ser Cys
210 215 220

Val Met Ile Glu Asp Tyr Asp Val Ile Ala Ser Met Ile Gly Ala Lys
225 230 235 240

Cys Lys Lys Leu Arg Thr Leu Asp Leu Trp Arg Cys Lys Asn Ile Thr
245 250 255

Glu Asn Gly Ile Ala Glu Leu Ala Ser Gly Cys Pro Leu Leu Glu Glu
260 265 270

Leu Asp Leu Gly Trp Cys Pro Thr Leu Gln Ser Ser Thr Gly Cys Phe
275 280 285

Thr Arg Leu Ala His Gln Leu Pro Asn Leu Gln Lys Leu Phe Leu Thr
290 295 300

Ala Asn Arg Ser Val Cys Asp Thr Asp Ile Asp Glu Leu Ala Cys Asn
305 310 315 320

Cys Thr Arg Leu Gln Gln Leu Asp Ile Leu Gly Lys Val Thr Ile Tyr
325 330 335

Lys Phe Val Leu Asn Val Cys Phe Leu Asp Arg Lys Ala Asn Leu Arg
340 345 350

Leu Phe Val Arg Lys Lys Ile Phe Gly Tyr Asn Lys Asn Phe Ile
355 360 365

Leu Ile Arg Trp Leu Gly Leu Ile Gly Asn Ala Arg
370 375 380

<210> 54

<211> 1380

<212> DNA

<213> Homo sapiens

<400> 54

aggccaagat tcggcacgag tggatataaaaa gatgtgcct atgcagaaaa ggatgggtgt 60
ggaatggaca gtcttaacaa aaagtttagc agtgctgtcc tcggggagg gccaataat 120
gggtatttt ataaactacc ttatgagctt attcagctga ttctgaatca tcttacacta 180
ccagacctgt gtagatttagc acagacttgc aaactactga gccagcattt ctgtgatcct 240
ctgcaataca tccacctcaa tctgcaacca tactggcaa aactagatga cacttctctg 300
gaatttctac agtctcgctg cacttgc cagtggttta atttatctt gactggcaat 360
agaggcttca tctctgttgc aggattttagc aggtttctga aggtttgtgg atccgaatta 420
gtacgccttg aattgtcttg cagccacttt cttatgaaa cttgctttaga agttatttct 480
gagatgtgtc caaatctaca ggccttaaat ctctccctt gtgataagct accacctcaa 540
gcttcaacc acattgccaat gttatgcagc cttaaacgac ttgttctcta tcgaacaaaa 600
gtagagcaaa cagcactgtc cagcatttt aacttctgtt cagagcttca gcacccctcagt 660
ttaggcagtt gtgtcatgat tgaagactat gatgtgatag ctagcatgat aggagccaag 720
tgtaaaaaac tccggaccctt ggatctgtgg agatgtaaat attactga gaatggaaa 780
gcagaactgg cttctgggtg tccactactg gaggagctt accttggctg gtgcccact 840
ctgcagagca gcaccgggtt cttcaccaga ctggcacacc agctccaaa cttgcaaaaa 900
ctcttctta cagctaatacg atctgtgtt gacacagaca ttgatgaatt ggcatgtaat 960
tgtaccaggt tacagcagct ggacatatta ggtaaggatca caatataaa atttgttta 1020
aatgtctgtt tccttgacag aaaagccaaat ctcagacttt ttgttaggaa aaagaaaaatt 1080
tttggataca ataaaaattt tattctgata agatggctt gttgtatagg aaatgcaga 1140

tagatcagtt aatataggga ataattatat atgtacttta ataaaatagt gaggacaata 1200
acaattttat agttgaactg taaaaaacta taaccattaa ttcttggct acttgttaga 1260
gtgagaattt acatgagctg cgctctctat ttttattaag gagagaagaa attaattcat 1320
ttgtataatg aattcaagct agttttttt aagtttctta attaagcggc cgcaagctta 1380

<210> 55
<211> 519
<212> PRT
<213> Homo sapiens

<400> 55
Met Val Ile Met Leu Glx Glu Arg Gln Lys Phe Phe Lys Tyr Ser Val
1 5 10 15

Asp Glu Lys Ser Asp Lys Glu Ala Glu Val Ser Glu His Ser Thr Gly
20 25 30

Ile Thr His Leu Pro Pro Glu Val Met Leu Ser Ile Phe Ser Tyr Leu
35 40 45

Asn Pro Gln Glu Leu Cys Arg Cys Ser Gln Val Ser Met Lys Trp Ser
50 55 60

Gln Leu Thr Lys Thr Gly Ser Leu Trp Lys His Leu Tyr Pro Val His
65 70 75 80

Trp Ala Arg Gly Asp Trp Tyr Ser Gly Pro Ala Thr Glu Leu Asp Thr
85 90 95

Glu Pro Asp Asp Glu Trp Val Lys Asn Arg Lys Asp Glu Ser Arg Ala
100 105 110

Phe His Glu Trp Asp Glu Asp Ala Asp Ile Asp Glu Ser Glu Glu Ser
115 120 125

Ala Glu Glu Ser Ile Ala Ile Ser Ile Ala Gln Met Glu Lys Arg Leu
130 135 140

Leu His Gly Leu Ile His Asn Val Leu Pro Tyr Val Gly Thr Ser Val
145 150 155 160

Lys Thr Leu Val Leu Ala Tyr Ser Ser Ala Val Ser Ser Lys Met Val
165 170 175

Arg Gln Ile Leu Glu Leu Cys Pro Asn Leu Glu His Leu Asp Leu Thr
180 185 190

Gln Thr Asp Ile Ser Asp Ser Ala Phe Asp Ser Trp Ser Trp Leu Gly
195 200 205

Cys Cys Gln Ser Leu Arg His Leu Asp Leu Ser Gly Cys Glu Lys Ile
210 215 220

Thr Asp Val Ala Leu Glu Lys Ile Ser Arg Ala Leu Gly Ile Leu Thr
225 230 235 240

Ser His Gln Ser Gly Phe Leu Lys Thr Ser Thr Ser Lys Ile Thr Ser
245 250 255

Thr Ala Trp Lys Asn Lys Asp Ile Thr Met Gln Ser Thr Lys Gln Tyr
260 265 270

Ala Cys Leu His Asp Leu Thr Asn Lys Gly Ile Glu Glu Ile Asp
 275 280 285
 Asn Glu His Pro Trp Thr Lys Pro Val Ser Ser Glu Asn Phe Thr Ser
 290 295 300
 Pro Tyr Val Trp Met Leu Asp Ala Glu Asp Leu Ala Asp Ile Glu Asp
 305 310 315 320
 Thr Val Glu Trp Arg His Arg Asn Val Glu Ser Leu Cys Val Met Glu
 325 330 335
 Thr Ala Ser Asn Phe Ser Cys Ser Thr Ser Gly Cys Phe Ser Lys Asp
 340 345 350
 Ile Val Gly Leu Arg Thr Ser Val Cys Trp Gln Gln His Cys Ala Ser
 355 360 365
 Pro Ala Phe Ala Tyr Cys Gly His Ser Phe Cys Cys Thr Gly Thr Ala
 370 375 380
 Leu Arg Thr Met Ser Ser Leu Pro Glu Ser Ser Ala Met Cys Arg Lys
 385 390 395 400
 Ala Ala Arg Thr Arg Leu Pro Arg Gly Lys Asp Leu Ile Tyr Phe Gly
 405 410 415
 Ser Glu Lys Ser Asp Gln Glu Thr Gly Arg Val Leu Leu Phe Leu Ser
 420 425 430
 Leu Ser Gly Cys Tyr Gln Ile Thr Asp His Gly Leu Arg Val Leu Thr
 435 440 445
 Leu Gly Gly Gly Leu Pro Tyr Leu Glu His Leu Asn Leu Ser Gly Cys
 450 455 460
 Leu Thr Ile Thr Gly Ala Gly Leu Gln Asp Leu Val Ser Ala Cys Pro
 465 470 475 480
 Ser Leu Asn Asp Glu Tyr Phe Tyr Tyr Cys Asp Asn Ile Asn Gly Pro
 485 490 495
 His Ala Asp Thr Ala Ser Gly Cys Gln Asn Leu Gln Cys Gly Phe Arg
 500 505 510
 Ala Cys Cys Arg Ser Gly Glu
 515

<210> 56
 <211> 2276
 <212> DNA
 <213> Homo sapiens

<400> 56
 atggtaatca tgctgttaaga gcgacagaaaa ttttttaaat attccgtgga tgaaaagtca 60
 gataaagaag cagaagtgtc agaacactcc acaggatataa cccatcttcc tcctgaggta 120
 atgctgtcaa ttttcagcta tcttaatcct caagaggat gtcgatgcag tcaagtaagc 180
 atgaaatggt ctcagctgac aaaaacggga tcgcttgga aacatcttta ccctgttcat 240
 tgggccagag gtgactggta tagtggtccc gcaactgaac ttgataactga acctgtatgtat 300
 gaatgggtga aaaataggaa agatgaaagt cgtgctttc atgagtggga tgaagatgct 360
 gacattgtatg aatctgaaga gtctgcggag gaatcaattg ctatcagcat tgcacaaatg 420

gaaaaacgtt tactccatgg ctttaattcat aacgttctac catabgttgg tacttctgt 480
 aaaaccttag tattagcata cagctctgca gtttccagca aatggtagt gcagatttt 540
 gagcttgc ctaacctgga gcacatggat cttaccaga ctgacatttc agattctgca 600
 tttgacagt ggtcttggct tgggtctgc cagagtcttgc ggcacatcttga tctgtctgtt 660
 tgtgagaaaa tcacagatgt ggccttagag aagatttcca gagctcttgg aattctgaca 720
 tctcatcaaa gtggctttt gaaaacatct acaagcaaaa ttacttcaac tgctggaaa 780
 aataaagaca ttaccatgca gtccaccaag cagtatgcct gtttgcacga tttaactaac 840
 aagggcattg gagaagaaaat agataatgaa cacccttggc ctaagcctgt ttcttctgag 900
 aatttcaactt ctccttatgt gtggatgtt gatgctgaag atttggctga tattgaagat 960
 actgtggaaat ggagacatag aaatgttggaa agtcttgcgtaatggaaac agcatccaaac 1020
 ttttagttt ccacctctgg ttgttttagt aaggacatgg tggactaag gactagtgtc 1080
 tggcggcgc agcatttgcg ttcctccagcc tttcgctatttgcgactc atttgttgc 1140
 acaggaacag cttaagaac tatgtcatca ctcccagaat cttctgcatttgcgactc 1200
 gcagcaagga cttagatttgcg tagggggaaa gacttaattt actttggag tggaaaatct 1260
 gatcaagaga ctggacgtgt acttctgtt ctcagttat ctggatgttgc tcaagatcaca 1320
 gaccatggc tcagggtttt gactctgggaa ggagggtgc ctatatttgc tcaacccat 1380
 ctctctgggtt gtcttactat aactggtgca ggcctgcagg atttggtttgc tcaatgtcct 1440
 tctctgaatg atgaataactt ttactactgt gacaacattt acggccctca tgctgataacc 1500
 gccagtggat gccagaattt gcagtgtgg tttcgagcct gctggccgc tggcgaatga 1560
 cccttgactt ctgatcttttgc tctacttcat tttagctgatc aggttttctt tcatgcactt 1620
 tactcatagc acatttcttg tggtaaccat cccttttgc gctgtacttgc ttttggccc 1680
 atttcttaca acttcagaaa tcttaatttgc tcaatgttgc tttctcttgca 1740
 aattataactt ttggttttaga aagggtttagt gtccttcaa aagggttgc tcaatgttgc 1800
 attttctttt taaaatgaaaat gctttaaaaga atgttggtaa tgccatgtca tttaaagtat 1860
 ttcatagata attttgaggat taaaatgttca tggagggtgat tgggtctt tacacattaa 1920
 cactgtacca agctttgcag atctttccg acacacatgt ctgaagactt attttcaaaag 1980
 acagcacattt tttggaaact aatcttttgc tcaatgttgc tcaatgttgc 2040
 cagaaggccaa attcaaaacca acccacattt aagggttgc tcaatgttgc 2100
 cttagctgatg ttagctcagt gaggtagaaa gcaaccaatcg atatttgc tttttaggg 2160
 tactttgttgc tcaccactgt ccctatgtca tcaaaatttgc gaggatgtt taaaatacc 2220
 acaatcattt gaagaaaatgt ataaaataaaatc tctactttgc ggactttacc aagtaa 2276

<210> 57

<211> 39

<212> PRT

<213> Homo sapiens

<400> 57

Leu Pro Leu Glu Leu Ser Phe Tyr Leu Leu Lys Trp Leu Asp Pro Gln
 1 5 10 15

Thr Leu Leu Thr Cys Cys Leu Val Ser Lys Gln Trp Asn Lys Val Ile
 20 25 30

Ser Ala Cys Thr Glu Val Trp
 35

<210> 58

<211> 117

<212> DNA

<213> Homo sapiens

<400> 58

cttccccctgg agctcagttt ttatttgc tttactcaca 60
 tgctgcctcg tctctaaaca gtggataatgttgc cctgtacaga ggtgtgg 117

<210> 59

<211> 10

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 59

aattcgcgcg

10

<210> 60

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 60

Lys Lys Glu Arg Leu Leu Asp Asp Arg His Asp Ser Gly Leu Asp Ser
1 5 10 15

Met Lys Asp Glu Glu

20